

# Y-12 National Security Complex

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ENERGY INDEPENDENCE AND SECURITY ACT  
OF 2007

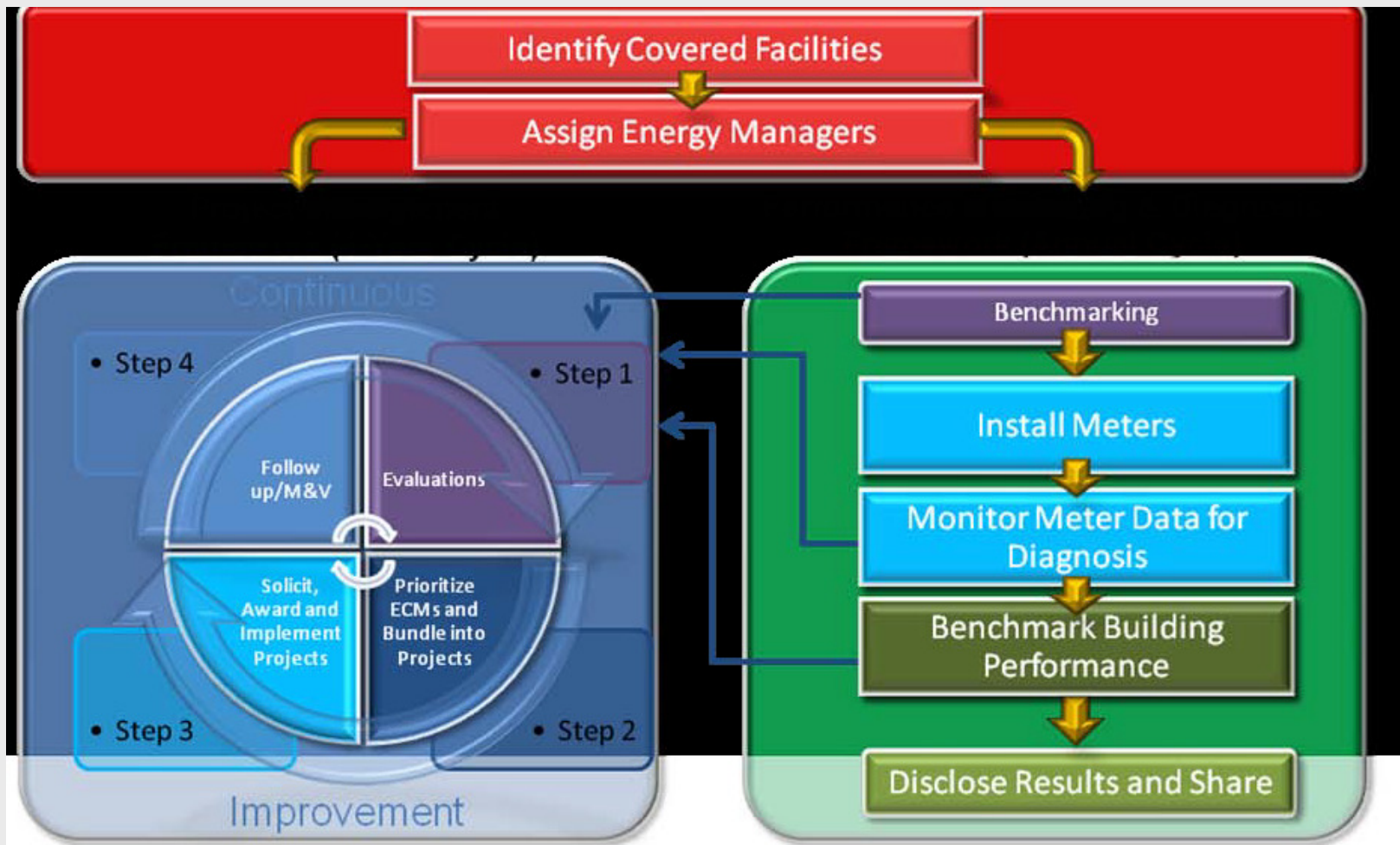
B&W Y-12

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# **Section 432 of EISA amends section 543 of the National Energy Conservation Policy Act by adding a new subsection (f)**

**Subsection (f) prescribes a framework for  
facility energy project management and  
benchmarking**



## Identify Covered Facilities

- Designated “Covered Facilities” must use a minimum of 75% of the total facility energy use for the site.
- Include all facilities where this energy management approach makes sense.
- Capture the largest % of energy use in the smallest number of the larger, energy-intensive facilities.

# Assign Energy Managers

The term “Energy Manager” may include:

- A contractor of a facility;
- A part-time employee of a facility;
- An individual who is responsible for multiple facilities, 42 U.S.C. 8253(f)(1)(B);

At a minimum, facility energy managers must meet the definition of “trained energy managers” from sec. 151, Subtitle F of the Energy Policy Act of 1992.

# Benchmark Building Performance

EISA requires energy managers to enter energy use data for each metered building... into a building energy use benchmarking system, such as Energy Star Portfolio Manager.

Energy Managers shall post and update the benchmarking data each year...

# Install Meters

Installing electric, natural gas, water, and steam meters is the best way to verify energy/water use and therefore the best way to verify savings.

# Monitor Meter Data for Diagnosis

By knowing the meter history, it is simple to tell if a major water leak exist or a steam relief valve is popping-off.

All appropriate buildings are required to be metered for electric use by Oct. 1, 2012 and with natural gas and steam usage appropriately metered by Oct. 1, 2016. (E.I.S.A. 2007)



# EVALUATIONS

**Within a 4 year period, agencies must conduct comprehensive energy & water evaluations for all covered facilities.**

**Evaluating “approximately” 25% of covered facilities each calendar year.**

# Comprehensive Evaluations Have Two Basic Components

1. Energy & Water use audits identify performance deficiencies when compared against similar structures.
2. Commissioning is an ongoing process that ensures systems are operating to original design specifications.

## DOE's Audit Standard

DOE's audit standard for meeting the statutory requirement is sufficiently rigorous, but flexible enough to ensure that viable energy-saving projects are identified, and also not so onerous as to require extensive resources to be spent auditing structures where engineers can quickly and easily conclude that no viable projects currently exist.

# Facility Energy and Water Audits

To standardize the energy audit process, the energy manager may chose to utilize the protocols created by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

# ASHRAE Defines 3 Energy Audit “Stages”

The Level I “Walk Through” analyses uses a brief site survey and utility bills to assess the facility.

The Level II analysis includes more detail and a cost-benefit analysis of potential energy conservation measures (ECM’s).

The Level III analysis includes energy modeling and system measurements, schematics and equipment lists.

## Level 1-Basic Audit

- Also known as the “one day” or “walk-through” audit.
- This level of effort will detect at least some of the “low hanging” fruit but should never be viewed as comprehensive.
- This is the easiest option and produces the crudest results, so don’t be tempted into thinking your done once you do this much – you’ve really only gotten started.

## Level II- Intermediate Audit

- By investing more time in the survey and energy analysis and adding some performance testing, this audit provides a breakdown of how energy is used as well as a broader range of savings options, including simple capital investments.
- This audit takes into account the “people factor” and explores maintenance procedures and their impact on savings measures.
- Many facilities will find this level of analysis to be sufficient.

## Level III – Advanced Audit

Also known as the “investment-grade audit,” this analysis digs into the details of large capital projects being considered as a result of previous audits.

Possible risk are assessed, and intensive engineering and economic analysis produces reliable estimates of project energy and financial performance with the high confidence needed for major capital projects.



# The Audit Process

## 3-Steps

- Pre-Site Work
- The Site Visit
- Post Site Work

# Pre-Site Work

Pre-site task:

- Collect and review 2 years of utility data
- Obtain building drawings- electrical, mechanical, architectural
- Draw a simple floor plan of the building and make several copies
- Calculate the gross square foot of the building
- Use a standard audit data form to collect building & equipment data
- Develop a building profile narrative; include age, occupancy, description, and existing conditions of major systems
- Compare energy use with other buildings of similar type

# The Site Visit

The site visit will be spent inspecting systems and answering specific questions from the pre-site review.

- Have necessary tools; tape, light meter, notebook, flashlight, etc.
- Interview the building manager prior to touring the building
- Confirm the floor plan on your drawing to the actual building
- Fill out the audit data sheets
- Look at the systems relating to the ECM's and O&M's on your list
- If possible take pictures as you walk through; equipment, lighting.

## Post-Site Work

- Immediately after the audit, review and clarify your notes
- Review and revise your proposed ECM and O&M lists
- Download photo's, identify and add notes as needed
- Organize all charts, graphs, building descriptions, data sheets, etc.

Evaluate the information gathered during the site visit, research possible conservation opportunities, organize the audit into a comprehensive report, and make recommendations on mechanical, structural, operational and maintenance improvements.

# Facility Re/Retro-Commissioning

**Retro-commissioning** is the process of commissioning equipment or a system that was not commissioned at the time of installation or during the warranty phase.

**Re-commissioning** is the process of commissioning a previously commissioned facility or system after expiration of the project development and warranty phases.

# The Report

The audit report of the facility energy and water evaluations needs to contain sufficient detail and actionable information about energy conservation measures (ECM's) so that sound project decisions can be based on the audit results.

# Basic Components of Audit Report

- I. Executive Summary**
- II. Building Information**
- III. Utility Summary**
- IV. Energy Conservation Measures (ECM's)**
- V. Operation and Maintenance Measures (O & M'S)**
- VI. Appendices**



# Audit Reports

- Audit reports range in length according to building size
- A typical page-count for audit reports of various size facilities range from 20-30 pages to 60-150 pages depending on the facility



## Prioritize ECM's and Bundle into Projects

After prioritizing ECM's The ones with a longer payback period may be bundled with ECM's with a shorter payback period. This may make the group as a whole attractive enough to be implemented.

This is a tactic that can be used to help meet other mandated sustainability goals such as water efficiency or greenhouse gas reductions.

# Solicit, Award and Implement Projects

1. Solicit and Award Contract
2. Commissioning and Acceptance
3. O & M Plan/Life of Contract Management

## Follow Up/Measure & Verify

The key reasons for the follow-up step include:

- Ensuring performance meets equipment and system specs.
- Meets agency and occupants needs
- Measure project savings
- Justify future project investment
- Replicating savings efforts throughout the agency